

PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

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[rubber stamp]

**PCT**

NOTIFICATION OF TRANSMITTAL OF  
INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing

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22.06.2004

Applicant's or agent's file reference  
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IMPORTANT NOTIFICATION

International application No.  
PCT/FR 03/00942

International filing date (day/month/year)  
25.03.2003

Priority date (day/month/year)  
02.04.2002

Applicant  
THALES et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the International preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The Applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purpose of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purpose of deciding whether, in that State, the claimed invention is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the IPEA/



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PATENT COOPERATION TREATY



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or Agent's file reference	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FR 03/00942	International filing date (day/month/year) 25.03.2003	Priority date (day/month/year) 02.04.2002
International Patent Classification (IPC) or national classification and IPC G11B7/003		
Applicant THALES et al.		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 7 sheets including this title page.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Instruction 607 of Administrative Instructions of the PCT).</p> <p>These annexes consist of a total of 4 sheets.</p>
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement according to Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>

Date of submission of the demand 28.10.2003	Date of completion of this report 22.06.2004
<p>Name and mailing address of the IPEA</p> <p> European Patent Office D-80298 Munich Tel. +49 89 2399 - 0, Tx: 523656 epmu d Fax: +49 89 2399 - 4465</p>	<p>Authorized officer:</p> <p>Stemmer, M</p> <p>Telephone No. +49 89 2399-2282</p> <p></p>

I. Basis of the report

1. This report has been drawn up on the basis of the following elements *(the replacement sheets received by the receiving office in response to an invitation according to Article 14 are considered in the present report as "originally filed" and are not annexed to the report as they contain no amendments (Rules 70.16 and 70.17).):*

Description, pages:

1-9 as originally filed

Claims, No.:

1-13 received on 07.06.2004 with fax

Drawings, sheets:

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/FR 03/00942

5. ☐ This report has been written disregarding (some of) the amendments, which were considered as going beyond the description of the invention, as filed, as is indicated below (Rule 70.2(c)):

*(All replacement sheets comprising amendments of this nature should be indicated in point 1 and attached to this report).*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty	Yes:	Claims	1-7,9-13
	No:	Claims	8
Inventive Step	Yes:	Claims	1-17,9-13
	No:	Claims	8
Industrial Applicability	Yes:	Claims	1-13
	No:	Claims	

**2. Citations and explanations**

**see separate sheet**

In the matter of point V

**Reasoned statement as regards novelty, inventive step and industrial applicability;  
citations and explanations in support of this statement**

1. Reference is made to the following document:

D1: US-A-4 785 411 (ISAKA HARUO ET AL) 15 November 1988 (1988-11-15).

2. With regard to Claim 1, document D1 describes (Figures 1 and 3; column 2, lines 28-35; column 3, lines 10-25; column 3, lines 61-65; column 5, line 40 to column 6, line 27, the references in brackets applying to document D1) a radial slaving method for a device for reproducing information from an optical disc in which the information stored on the disc in the form of alterations arranged along predetermined tracks (20) of the disc is explored by a light beam which converges at a spot on the optical disc and results in a beam emerging from the said disc by reflection or transmission, the said device being equipped with a multi-photodiode far-field detection system (5a-5d) for detecting the said emergent light beam, the said method consisting in combining the read signals of the said photodiodes of the said detection system so as to form four read subsystems (5a-5d) comprising two pairs of subsystems, the subsystems of each pair (5a, 5c; 5b, 5d) being arranged on either side of a first axis parallel to the image of the axis of the track being explored, and the said pairs being arranged on either side of a second axis perpendicular to the said first axis, the said first and second axes being axes of symmetry for the said detection system.

Consequently, the subject matter of Claim 1 differs from that known from D1 in that: the said method being characterized in that the said step of combining the read signals of the said photodiodes consists in taking the difference between the read signals of two subsystems belonging to different pairs in order to form a read signal (diag1) along a first diagonal of the detection system and a read signal (diag2) along a second diagonal of the detection system and in that the said method consists in phase-comparing the signals (diag1; diag2) obtained by each of the two subsystems in order to obtain a radial error signal (Sr).

The subject matter of Claim 1 is therefore novel (Article 33(2) PCT).

The problem that the present invention proposes to solve can therefore be considered as how to provide a novel radial slaving method for a device for reproducing information from an optical disc.

The solution of this problem, proposed in Claim 1 of the present application, is regarded as involving an inventive step (Article 33(3) PCT), for the following reasons: The way in which the read signals from the said photodiodes are combined, by taking the difference between them and by comparing the phases thereof does not fall within the prior art nor does it stem therefrom in an obvious manner.

3. Claims 2-7 depend on Claim 1 and therefore also satisfy, as such, the conditions required by the PCT as regards novelty and inventive step.
4. As regards Claim 8, document D1 describes (Figures 1 and 3; column 2, lines 28-35; column 3, lines 10-25; column 3, lines 61-65; column 5, line 40 to column 6, line 27, the references in brackets applying to document D1) a device for reproducing information from an optical disc in which the information stored on the disc in the form of alterations arranged along predetermined tracks (20) of the disc, the said reproduction device comprising a light source (1) for providing an incident light beam, first optical means (2, 3) for making the said beam converge at a spot on the optical disc, second optical means (2, 3, 4) for splitting the beam emerging from the said disc and resulting from reflection or transmission of the incident beam by the disc and a multi-photodiode detection system (5a-5d) arranged in the far-field in the path of the said emergent beam in order to detect the said light beam, the said reproduction device furthermore comprises:
  - first combining means (8, 9), which receive the individual read signals of the said photodiodes (5a-5d) in order to construct two read signals corresponding to two subsystems, the sensitivity functions of which in the plane of the disc make two symmetrical angles with the direction of the track being explored;
  - second phase comparison means (12) for comparing the phases of the said two read signals of the subsystems and providing a radial error signal (Sr).

The subject matter of Claim 8 is therefore not novel (Article 33(2) PCT).

6. With regard to Claim 9, D1 discloses the fact that the detection system consists of a four-quadrant detector (5a-5d) having two pairs of photodiodes, the photodiodes of each pair (5a, 5c; 5b, 5d) being arranged on either side of a first axis parallel to the image of the axis of the track being explored and the said pairs being arranged on either side of a second axis perpendicular to the said first axis, the said first and second axes being axes of symmetry for the said detection system.

The subject matter of Claim 9 differs from the disclosure of D1 in that the said reproduction device is characterized in that the said first combining means comprises two differential circuits, which respectively receive the signals of two photodiodes belonging to the respective diagonals of the said detection system and each provide the difference (diag1, diag2) between the signals received as a read signal along a first and a second diagonal.

The combination of the features of Claim 9 is not included in the prior art nor does it stem therefrom in an obvious manner. It is therefore suggested to the applicant that a new independent claim be drafted so as to introduce these features into it, taking into account the fact that the known features in combination in D1 must be indicated in the first part of this claim (rule 6.3 b) PCT).

7. Claims 10-13 depend on Claim 9 and therefore also satisfy, as such, the conditions required by the PCT as regards novelty and inventive step.

**Additional comments:**

1. The phrase "the sensitivity functions (of which) in the plane of the disc make two symmetrical angles with the direction of the track being explored", used in Claim 8, is obscure since a function cannot make an angle with a direction. The subject matter of Claim 8 is therefore vague and equivocal, and leaves doubt as to the meaning of the technical features to which it refers. The subject matter of the said claims is therefore not clearly defined (Article 6 PCT). The meaning of the phrase to which the present objection refers is considered, for the purposes of the present statement, as being that the first subsystem has a first sensitivity function in the plane of the disc

and the said first sensitivity function has an axis of symmetry making a first angle with the direction of the track being explored;  
the second subsystem has a second sensitivity function in the plane of the disc and the said first sensitivity function has an axis of symmetry making a second angle with the direction of the track being explored;  
the said first angle being symmetrical with the said second angle relative to the direction of the track being explored.

2. Claim 8 defines, in a general way, the following feature by indicating its function: "the sensitivity functions in the plane of the disc make two symmetrical angles with the direction of the track being explored".

However, the description and the drawings (Figure 1; page 5, line 7 to page 6, line 27) give the impression that this function can be derived only in a defined manner, in this case thanks to the diagonal grouping of the photodiodes (1 and 3, 2 and 4, respectively) and no other means is indicated.

Consequently, Claim 8 is not based on the description, as Article 6 PCT requires.

3. The phrase "... substantially proportional ( $\Delta r$ ) of the radial tracking" in Claim 1 is obscure. In light of the original version of Claim 1, the meaning of the said phrase is considered as being "... substantially proportional to the radial tracking error ( $\Delta r$ )".
4. The independent Claim 1 is not worded unequivocally (the term "characterized in that ..." is used twice) in two parts as stipulated by Rule 6.3b)PCT, although such a presentation would seem appropriate in this case, the known features in combination with the prior art (document D1) appearing in the preamble (Rule 6.3 b) i) PCT) and the remaining features appearing in the characterizing part (Rule 6.3 b) ii) PCT).
5. Contrary to what Rule 5.1 a) ii) PCT requires, the description does not indicate the relevant prior art presented in document D1 nor does it cite this document.